

WHAT IS CLAIMED IS:

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1. A method of applying an anti-microbial treatment to a packaging material having at least one surface, said method comprising the steps of:
- a) providing a substantially inert dispersion comprising a polymer and zeolites containing anti-microbial metal ions, said zeolites having a particle size of between about 2 and about 5 microns, a pore size of between about 3 and about 5 Angstroms, and comprising from about 0.5 % to about 10% by weight of the dispersion,
 - b) printing said dispersion onto said surface of said packaging material, and
 - c) drying said dispersion to form a coating layer having an exposed surface containing said polymer and said zeolites present on at least a portion thereof.
2. The method of Claim 1, wherein, the anti-microbial metal ion is a silver ion.
3. The method of Claim 1, wherein, the dispersion has a viscosity between about 10 and about 400 centipoise at 10 -25 °C.
4. The method of Claim 1, wherein the dispersion has a viscosity between about 400 and about 50,000 centipoise.
5. The method of Claim 1, wherein the zeolites comprise from about 1% to about 5% by weight of the dispersion.
6. The method of Claim 5, wherein the zeolites preferably comprise from about 2% to about 5% by weight of the dispersion.
7. The method of Claim 1, wherein the dried coating layer is hydrophobic.
8. The method of Claim 1, wherein the dispersion is a solvent-based dispersion and the polymer is selected from the group consisting of polyamides, acrylics, polyvinyl chloride, methyl methacrylates, polyurethanes, ethyl cellulose, polyvinylbutyral, polyketones and nitrocelluloses.
9. The method of Claim 1, wherein the dispersion is a water-based dispersion, and the polymer is selected from the group consisting of sulfonated polyesters, polyamides, shellacs, polyurethanes, maleics and acrylics.

10. The method of Claim 9, wherein the polymer is a polyester.
11. The method of Claim 10, wherein the polymer is a sulfonated polyester.
12. The method of Claim 8, wherein the polymer is a polyamide.
13. The method of Claim 12, wherein the zeolites have a particle sizes of at least about 5 microns, and a pore size of at least about 4 Angstroms.
14. The method of Claim 1, wherein the dispersion is printed in a discontinuous pattern over the surface of the packaging material.
15. The method of Claim 1, wherein the printing is rotogravure printing.
16. The method of Claim 1, wherein the printing is flexographic printing.
17. The method of Claim 1, wherein the printing is lithographic printing.
18. The method of Claim 1, wherein the dispersion is printed on said surface at a rate of about 0.1 lbs./3,000 ft. square to 2 lbs./3,000 ft. square.
19. The method of Claim 1, wherein the coating layer has a thickness of from about 2 microns to about 20 microns.
20. The method of Claim 1, wherein the coating layer has a thickness of from about 2 microns to about 8 microns.
21. The method of Claim 1, wherein said packaging material is a polymer film.
22. The method of Claim 1, wherein said packaging material is selected from the group consisting of cellophanes, vinyl chlorides, vinyl chloride copolymers, cellulose acetate films, vinylidene chlorides, vinylidene chloride copolymers, ethyl cellulose, aluminum foils, methyl cellulose, laminates, polyesters, papers, polyethylenes, paperboards, polypropylenes, glassines, polystyrenes, nylons and combinations thereof.

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23. A packaging material having anti-microbial properties on at least one surface thereof, comprising an anti-microbial coating layer printed on the surface of said packaging material, said coating layer comprising an exposed surface containing a polymer and zeolites containing anti-microbial metal ions, said zeolites having a particle size of between about 2 and about 5 microns, a pore size of between about 3 and about 5 Angstroms, and comprising from about 0.1 to about 5 % by weight of said coating layer.
 24. The packaging material of Claim 23, wherein the anti-microbial metal ion is a silver ion.
 25. The packaging material of Claim 23, wherein the zeolites comprise from about 0.1 to about 5 % by weight of the coating layer.
 26. The packaging material of Claim 23, wherein the coating layer is hydrophobic.
 27. The packaging material of Claim 23, wherein the polymer is selected from the group consisting of polyamides, acrylics, polyvinyl chloride, methyl methacrylates, polyurethanes, ethyl cellulose, polyvinylbutyral, polyketones, and nitrocelluloses.
 28. The packaging material of Claim 23, wherein the polymer is polyester.
 29. The packaging material of Claim 28, wherein the polymer is a sulfonated polyester.
 30. The packaging material of Claim 23, wherein the coating layer is discontinuous over the surface of the packaging material.
 31. The packaging material of claim 23, wherein the coating layer has a thickness of about 2-8 microns.
 32. The method of Claim 1 wherein the dispersion is aqueous, the polymer comprises lucidene, the zeolites have a particle size of about 5 microns and a pore size of about 4 Angstroms.
 33. The method of Claim 1 wherein the dispersion is a solvent-based dispersion, the polymer comprises polyamides and nitrocellulose, and the zeolites have a particle size of about 5 microns and a pore size of about 4 Angstroms.

34. A packaging material with anti-microbial properties, made by the method of Claim 1.

35. ~~A substantially inert dispersion of anti-microbial zeolites, said dispersion comprising a polymer and zeolites containing anti-microbial metal ions, said zeolites having a particle size of between about 2 and about 5 microns; a pore size of between about 3 and about 5 Angstroms, and comprising from about 5% to about 10% by weight of the dispersion.~~

36. The dispersion of Claim 35, wherein the anti-microbial metal ion is a silver ion.

37. The dispersion of Claim 35, wherein the dispersion is a solvent-based dispersion and the polymer is selected from the group consisting of polyamides, acrylics, polyvinyl chloride, methyl methacrylates, polyurethanes, ethyl cellulose, polyvinylbutyral, polyketones and nitrocelluloses.

38. The dispersion of Claim 35, wherein the dispersion is a water-based dispersion, and the polymer is selected from the group consisting of sulfonated polyesters, polyurethanes, polyamides, shellacs, maleics and acrylics.

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